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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/495,407	01/31/2000	Keith Stivers	OSI-2300/2310(23815.0002)	4823
7590	03/14/2006		EXAMINER	
DAVID B QUICK ICE MILLER ONE AMERICAN SQUARE BOX 82001 INDIANAPOLIS, IN 46282			MOSSER, ROBERT E	
			ART UNIT	PAPER NUMBER
			3713	
DATE MAILED: 03/14/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/495,407	STIVERS ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Robert Mosser	3713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 07 December 2005.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-28,33-51,53,54,56-60,62,64,65,67,68,77-84,86-88 and 90-96 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-28,33-51,53,54,56-60,62,64,65,67,68,77-84,86-88 and 90-96 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
     Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
     Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

**Claims 1-28, 33-51, 53, 54, 56-60, 62, 64, 65, 67, 68, 77-84, 86-88, 90-96 are pending.**

**The 1449 Submitted 10/08/2004 has been considered and attached for the applicant's records.**

**This action is Non-Final.**

◆

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 7<sup>th</sup>, 2005 has been entered.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11, 33, 57-60, 65, 67-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gobush et al (US 5,803,823) in view of Gobush et al (US 6,241,622) in further view of Sullivan (4,158,853), in yet further view of Bouton (US 5,472,205).

Gobush (5,803,823) teaches an apparatus for monitoring the swing path of a golf club close to impact with a ball including an impact location for receiving the ball (Fig 4 & 5) and a first sensor (6) proximate to the impact location;

Though stating that the features directed to the tracking and calculation of golf ball behavior are old and well known Gobush does not teach the specific tracking of the ball parameters or the incorporation planer sensor array. However, Gobush does teach the tracking of ball related parameters in a related patent document (US 6,241,622).

Gobush (6,241,622) teaches an image capture device including a camera (36, 38) for capturing two or more images of the golf ball after impact with the golf club head (Fig 4 & 5); and a processor for receiving signals indicative of a temporal profile and three dimensional velocity of the golf ball by extrapolating perimeters of two or more images taken using the camera, and by determining three-dimensional spatial positions of the ball in said images (equivalent to the image of the golf ball) and calculating the three-dimensional velocity of said golf ball based on said three-dimensional spatial positions (Abstract, Col 8:39-42, Col 10:10-17, Col 13:45-50). Extrapolations based on orientation and flight behavior are well encompassed in the 34 equations contained with in the 6,241,622 reference that encompass elements from Cartesian position, formulas relation velocity to time, ball spin direction to time or position and a variety of other extrapolations based off of the initial ball impact event. Further evidence of Gobush's

extrapolation maybe found in Column 14 lines 23 through 41 wherein he refers directly to the process of "interpolation" which is inherently a type of extrapolation and defined as such through mathematical inverse. Likewise linear extrapolation is a subset of extrapolation as linear interpolation is a subset of interpolation. The later of which is demonstrated by Gobush starting with column 12 lines 56 through column 13 line 36 where the system solves a set of four linear equations in order to derive ball behavior.

Further the language "consisting essentially of a single camera" fails to limit the use of multiple cameras on at least two points. On the first point in order for the applicant to maintain the use the language "consisting essentially of" they must demonstrate with reference to the relevant portions of their disclosure a clear indication of what the basic and novel characteristics actually are (MEP 2111.03). On the second point the preamble limitation of "comprising" presented in all pending independent claims would allow for the inclusion of multiple "singular camera"(s). Hence when the claims are considered in whole the presented claim structure would not presently be limited to a singular as presented. However in the interest of furthering prosecution Sullivan et al (US 4,158,853) teaches the use of a single camera in figure 2 for the capture of post impact ball flight characteristics.

It would have been obvious to one of ordinary skill in the art at the time of invention to have incorporate the ball tracking system as taught by Gobush (6,241,622) with the club tracking as taught by Gobush (5,803,823) with further the single camera golf ball post impact data capture system/method of Sullivan (4,158,853) in order provide a calculation verification means and better analyze the effect of the swing on

true ball flight behavior while reducing system manufacture cost through the use one verses multiple cameras.

In related application Bouton teaches a first array of sensors proximate to the impact location and a second array of sensors spaced apart from the first array behind the impact position along swing path, the first and second array positioned such that a golf club swung in preparation for contact with a golf ball at the impact location will have a swing plane in angular relation to the first and second arrays (Fig 8, 9). Claim language found in at least claims **2-6** is interpreted as further describing the sensor array as presented in the prior art figure 8 with claimed variants of functionality found in the prior art figures 5 and 13.

Bouton further teaches a processor for receiving signals indicative of a temporal profile of which sensors the golf club head is over during the swing and for determining at least one of swing path and a club head angle of the golf club based on said signals indicative of the temporal profile (Fig 5, 8,9).

It is the examiner's interpretation that any temporal elements not directly stated in the reference of Bouton are none the less encompassed in Bouton's calculation of ball velocity which in turn would require the measurement of time in association with distance to calculate. Further this sensor matrix would serve as so set forth to accurately determine the position of the club both on it's approach and departure serving as ideal trigger means for the image system of Bouton described above.

It would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the sensor array of Bouton in the invention of

Gobush/Gobush in order to provide detailed shutter timings for the camera trigger and an additional calibration method for the device of Gobush/Gobush/Sullivan

Claims **12-28, 34-51, 53-54, 56, 62, 64, 77-84, 86-88, and 90-96** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gobush et al (US 5,803,823) in view of Gobush et al (US 6,241,622) in further view of Sullivan (4,158,853) in yet further view of Bouton (US 5,472,205) in yet further view of Mook (US 5,067,719).

Regarding at least claims **12-28, 34-51, 53-54, 56, 62, 64, 77-88, and 90-96** and in addition to the above stated. The invention of Gobush/Gobush/Sullivan/Bouton teaches the use of dots for the automatic extrapolation of spin, determination of ball perimeter, but is silent regarding the use of stripes or a stripe rather then dots as a visual reference tool.

In a related application Mook teaches the use of circumambulatory stripe(s) around a golf ball for a visual indication of ball spin (Abs 7 Fig 1-5). It would have been obvious to use the stripes of Mook as reference indices in the invention of Gobush/Gobush/Sullivan/Bouton in order to provide an index which could not be obstructed through the presence of finite amount of dirt on the ball surface.

With the replacement of the dot system of Gobush as taught above with the stripe(s) system of Mook, features that where previously measured by the dots would be so equivalently measured by the stripe(s). For example in claim **49** the curvature of the stripe would be inherently the function of ball orientation/surface features and as the stripe(s) of Mook are taught in the claimed manner any stripes would be visible from a

fixed view during the swing. As such the stripe would serve the same function and purpose as the described stripe laid forth in the invention of Gobush/Gobush//Sullivan/Bouton/Mook.

Claims **12-28, 34-51, 53-54, 56, 62, 64, 77-84, 86-88, and 90-96** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gobush et al (US 5,803,823) in view of Gobush et al (US 6,241,622) in further view of Sullivan (4,158,853) in yet further view of Bouton (US 5,472,205) in yet further view of Katayama (US 6,042,483).

Regarding at least claims **12-28, 34-51, 53-54, 56, 62, 64, 77-88, and 90-96** and in addition to the above stated. The invention of Gobush/Gobush/Sullivan/Bouton teaches the use of dots for the automatic extrapolation of spin, determination of ball perimeter, but is silent regarding the use of stripes or a stripe rather then dots as a visual reference tool.

In a related application Katayama teaches the use of circumambulatory stripe(s) around a golf ball for a visual indication of ball spin in association with a computer flight monitoring system (Fig 4-5 & Col 4:14-41). It would have been obvious to use the stripes of Katayama as reference indices in the invention of Gobush/Gobush/Sullivan/Bouton/Katayama in order to provide an index which could not be obstructed through the presence of finite amount of dirt on the ball surface.

With the replacement of the dot system of Gobush as taught above with the stripe(s) system of Katayama, features that where previously measured by the dots would be so equivalently measured by the stripe(s). For example in claim **49** the

curvature of the stripe would be inherently the function of ball orientation/shape and as the stripe(s) of Katayama are taught in the claimed manner any stripes would be visible from a fixed view during the swing. As such the stripe would serve the same function and purpose as the described stripe laid forth in the invention of Gobush/Gobush/Sullivan/Bouton/Katayama.

### ***Response to Arguments***

Applicant's arguments filed December 7<sup>th</sup>, 2005 have been fully considered but they are not persuasive.

#### **A.I. The Extrapolation of Perimeters**

On pages 18 through 24 of the remarks by applicant submitted in their most recent response, the Applicant proposes that the prior art of Gobush '622 fails to teach the extrapolation of perimeters (ball perimeters).

*Exemplary claim 1 states the following with reference to this limitation "...by extrapolating perimeters of the image of the golf ball..."*

*Gobush '622 teaches the capture of multiple images of the golf ball (Gobush '622 Col 5:7-16) and the extrapolation of dots defining a golf ball perimeter from said images (Gobush '622 Figure 4).*

Applicant further proposes that the prior art of Gobush '622 specifically ignores the perimeter of the ball but instead is focused on the "position of the dots in the images".

It is however, noted that the dots of Gobush '622 are located on the surface of the golf ball and would in fact serve to define the perimeter of the golf ball (Gobush '622 Col 4:2-21 & Figure 4).

In general the applicant contends that the system of Gobush fails to extrapolate the perimeters of a golf ball but instead seeks to suppress this information in order to acquire solely the reflective dots present upon the surface of the ball.

On a first point if the dots define the surface portions of the golf ball and hence a perimeters of the golf ball as presented above. The applicant however would seem to be arguing a limitation such as -the entire perimeter or surface- or alternatively -a camera perceivable hemisphere- not presently reflected in the claims. However on a second related point the system of Gobush '622 utilizes the components of filtering and reflective light surfaces as at least presented in the applicant's arguments to remove extraneous data including the image of the golf ball and surrounding environment (Gobush '622 Figure 4). This described act of filtering out all information would be by definition extrapolating the perimeters ball surface through only perceiving the dots on the surface of the golf ball

#### A.II Consisting Essentially Of

The applicants arguments regarding the inclusion of the language "consisting essentially of have been addressed in at least the rejection of claim 1 above. On a further note however proposed arguments submitted by the Applicant unofficially on January 27<sup>th</sup>, 2006 could be considered sufficient to demonstrate with reference to the relevant portions of their disclosure a clear indication of what the basic and novel

characteristics actually are upon formal submission of these arguments. Such a submission however would not obfuscate the issues arising from the interaction of the "consisting essentially of" limitation and the term comprising as contained in the respective preamble of the claim as presented in the rejection of claim one above. Remaining arguments are premised on the claimed inclusion of a sole singular camera that respectfully, has not yet been established by the claim language.

B.I. The Rejection of claims does not contain each an every element claimed

On pages 24 through 26 of the remarks by applicant submitted in their most recent response, the Applicant proposes that the combination of prior art applied fails to teach the claim limitations of a singular camera system that extrapolates a ball perimeter as so claimed.

*These arguments are collectively dependent on features demonstrated and clarified in section A above. As the present claims do not support the interpretation of a singular camera or define the perimeter of a ball in a manner to separate it from the interpretation of dots defining a perimeter, the references have been demonstrated to contain the claimed features that were proposed by applicant as lacking.*

B.II.a The Rejection of claims does not address a device consisting of Essentially a single camera

Applicant proposes that the combination of prior art applied fails to teach the claim limitations of a singular camera system as so claimed.

This argument has been addressed in section B.I. above.

B.II.b The Rejection of claims does not address or provide for determining the spin on the ball from the curvature of the stripe or marking.

The Applicant proposes that the combination of prior art applied fails to teach the claim limitation of determining the spin on a ball from the curvature of a stripe or marking that is at least half way circumambulatory of the golf ball.

For clarity the Examiner relies on Mook purely for a teaching to convert the dots of Gobush with stripes. Both of the prior art systems are related in determining the spin of specifically a golf ball. In the interest of further reducing the issue it is unclear to the Examiner why the Applicant apparently challenges the inclusion of the Mook reference in absence of the system of Gobush/Gobush/Sullivan/Bouton and instead focuses on the Mook teaching and so the Examiner poses the following questions to the Applicant.

-How is the curvature of the stripe any different then the orientation of the stripe?

-If one were to concede that the orientation of a stripe is directly related to the perceived curvature of the stripe, what claimed aspect not already provided for above through the use of Gobush's dots would be provided for through the use of a stripe?

-In the hypothetical absence of Mook what does the Applicant believe would separate the use of Dots (Gobush) and the claimed use of a stripe that would provide the means to overcome a rejection premised on an obvious matter of design choice type rejection wherein the dots of Gobush are replaced by a stripe?

-How would the use of a stripe in place of the dots of Gobush not represent "Printed Matter" (MPEP 2112.01)? What specific new and unobvious functional relationship between the printed matter and the substrate exists?

C.I.-C.II. The Rejection of claims does not contain each an every element claimed

On pages 27 through 29 of the remarks by applicant submitted in their most recent response, the Applicant proposes that the combination of prior art applied fails to teach the claim limitations of a singular camera system that extrapolates a ball perimeter as so claimed.

*These arguments are collectively dependent on features demonstrated and clarified in sections A & B above.*

♦

The examiner appreciates the time and effort of the Applicant's attorney in attempting to reach mutually agreeable claim language during informal yet productive telephone conversations. Discussions surrounding the possibility of emphasizing a singular camera system that determined the movement of a golf ball in at least one direction through a change in the camera perceived ball size (In combination with the remainder presented claim language), though showing promise in at least addressing the art of record, were stalled by key claim limitations, which reasonably allow for the inclusion of multiple cameras (reflected in the rejections presented above).

♦

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Mosser whose telephone number is (571)-272-4451. The examiner can normally be reached on 8:30-4:30 Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan M. Thai can be reached on (571)272-7147. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

REM



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